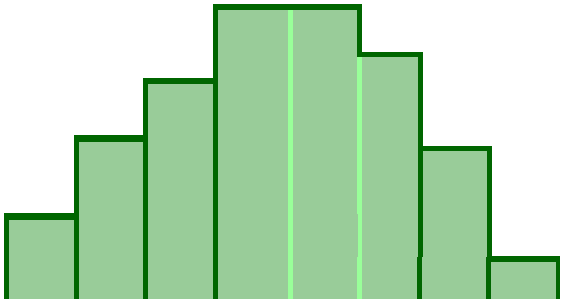

Epidemiology Newsletter

Office of Epidemiology **April 2004** **Utah Department of Health**

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The Epidemiology Newsletter is published monthly by the Utah Department of Health, Division of Epidemiology and Laboratory Services, Office of Epidemiology, to disseminate epidemiologic information to the health care professional and the general public.

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24 hour Disease/Injury Reporting Number
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Email: epi@utah.gov

Approval 8000008:
Appropriation 3705

Food Safety for Summer and All Year Long

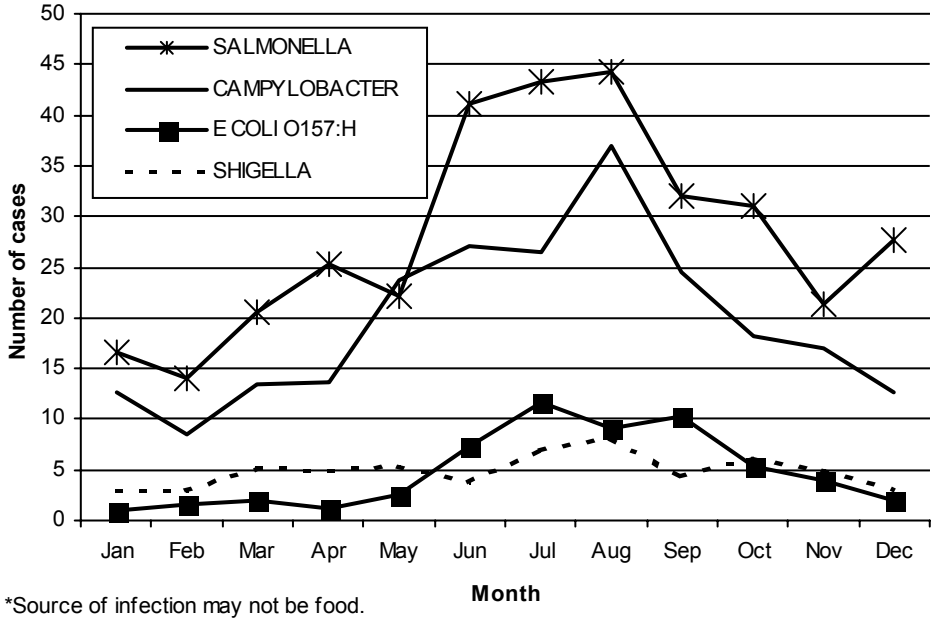
Summertime Foodborne Illness

There are invariably more cases of foodborne illness during the summer months than any other time of the year (see Figure 1). Why is this? Hotter outdoor temperatures and serving meals with inadequate refrigeration or hand washing facilities provide perfect conditions for disease transmission. Summer is also the time for hiking, fishing, and water activities, giving untreated water the chance to spread disease.

Here are some tips to prevent foodborne illness [1, 2]:

1. Choose foods carefully
    - Buy perishable food last and refrigerate right away so that they do not spoil in a hot car.
    - Avoid unpasteurized (raw) dairy products.

Figure 1: Average Number of Foodborne* Illness Cases by month, 1999-2003, State of Utah



*Source of infection may not be food.

    - Do not allow juices from eggs, meat, seafood, and poultry to drip on other food. These are more likely to contain bacteria.
    - Don't plan to handle raw ground beef, poultry, or eggs if hand-washing facilities will not be available.
2. Prepare food carefully
    - Do not prepare food for others if you have symptoms of food-borne illness, such as diarrhea or vomiting.
    - Wash hands thoroughly before and after handling food.
    - Clean cutting boards and uten-sils used for raw meats with hot, soapy water before using them with cooked/ready-to-eat food.
    - Use disposable towels or rotate cloth towels frequently. They can harbor bacteria that can be transferred to uncontaminated hands or food.
    - Never eat rare ground beef, poultry, or eggs. Use a meat thermometer to make sure that meats have been cooked to an appropriate internal temperature (160° F for hamburger and 180° F for poultry). At a restaurant, send back ground beef or poultry if it's pink in the middle.
    - Wash fruit and vegetables well before eating them.
    - Use only culinary water sources, i.e. not from a stream or secondary water supply. Boil or treat water that is from any other source.
3. Eat food promptly and store food appropriately
    - Eat food as soon as it is served. Do not allow it to sit for long periods of time.
    - ***Keep hot foods hot and cold foods cold*** – harmful bacteria love room temperature. Hot food should be kept at 140° F or higher. Cold food should be refrigerated at 40° F or cooler.
    - Do not leave perishable foods out for more than two hours. Promptly refrigerate or freeze leftovers. Refriger-ate restaurant leftovers or take-out immediately or dispose of them.
    - Re-heat leftovers until steaming hot all the way through. Don't rely on mixing hotter parts with colder parts to reach an appropriate temperature.
    - ***When in doubt, throw it out***. Not all contaminated food has an "off" odor.

Causes of Foodborne Illness

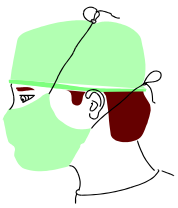
Common causes of illness include bacteria, parasites, viruses, and non-infectious agents. Each causative agent has a different incubation period and produces different symptoms (see Table 1). Only a fraction of people who have foodborne illness will seek medical care. Those who do may or may not submit a specimen for testing. Bacteria are most likely to be identified as the cause of illness; however, testing for viruses is rarely done for diarrheal disease. Viruses are considered the number one cause of foodborne illness [3].

Some traditionally "foodborne" illnesses can be spread other ways. For example, the gastrointestinal tracts of reptiles and amphibians naturally carry *Salmonella* species than can infect humans. Reptiles and amphibians are asymptomatic carriers of *Salmonella;* up to 94% of them may be infected with *Samonella*. These animals might initially be infected before birth; in the wild, by eating food and water contaminated by feces; or in the home, from being fed undercooked chicken or meat or by contact with household dust. Direct contact is not necessary for human infection, so recommendations are to keep reptiles out of households containing young children or persons with weak immune systems and to not allow reptiles to roam freely throughout the house. Although most human *Salmonella* infections are caused by the consumption of contaminated meat, poultry, or eggs, a recent study suggests that ~74,000 *Salmonella* infections may be associated with reptile and amphibian exposure in the United States annually [4]. Pet chicks and ducklings have also been found to be a source of human *Salmonella* infections [5].

Table 1: Examples of food borne illnesses, incubation periods, symptoms, and associated foods (3).

Etiology	Incubation Period	Common symptoms	Associated foods*
Parasites	Days to weeks		
Giardia lamblia	1-4 weeks	Diarrhea, bloating	Untreated water
Cryptosporidium parvum	7 days (2-28 days)	Cramping, watery diarrhea	Untreated water, fruits and vegetables
Bacteria	Hours to days		
Campylobacter jejuni	2-5 days	Diarrhea (possibly bloody), fever, vomiting	Raw/rare poultry, raw milk
Shigatoxin-producing *E. coli*	1-8 days	Severe bloody diarrhea, vomiting, no fever	Raw/rare ground beef, fruits and vegetables
Salmonella	1-3 days	Diarrhea, fever, vomiting	Eggs, poultry, raw milk
Shigella	1-2 days	Diarrhea (bloody), fever, cramps	Contaminated food or water (person-to-person spread)
Staphylococcus aureus	1-6 hours	Sudden onset of nausea and vomiting	Improperly refrigerated meats, salads (potato and egg), cream pastries
Viruses	Days to weeks		
Norovirus	1-2 days	Nausea, vomiting, watery diarrhea, no fever	Foods touched by infected food workers, salads, sandwiches, ice
Hepatitis A	30 days (15-50 days)	Diarrhea, jaundice, flu-like symptoms	Foods touched by infected food handler, raw produce (green onions)
Non-infectious agents	Minutes to hours		
Mushroom toxins	<2 hours	Vomiting, diarrhea, neurological symptoms	Wild mushrooms
Pesticides	few min – few hours	Nausea, vomiting, diarrhea, neurological symptoms	Any contaminated food

*Source of infection may not be food.



Foodborne Illness Epidemiology: For Clinicians

Public health surveillance for foodborne illness is conducted through physician or laboratory reporting of diseases, including: amebiasis, botulism, cholera and other *Vibrio* infections, shigatoxin-producing *E. coli* infections, Hepatitis A, listeriosis, salmonellosis, shigellosis, and *Yersinia* enteritis. Also any increased incidence of disease that may indicate an outbreak, regardless of etiology, should be reported to public health [6]. Clinical presentation is similar in many cases regardless of the etiologic agent. Differentiating foodborne disease from other gastrointestinal illness is difficult when patients have chronic diarrhea, severe abdominal pain or underlying chronic conditions. Foodborne disease should be considered and laboratory testing done if any of the following signs and symptoms are present:

- Bloody diarrhea
- Weight loss
- Diarrhea leading to dehydration
- Fever
- Prolonged diarrhea (3 or more unformed stools per day, persisting several days)
- Neurological involvement such as parasthesias, motor weakness, cranial nerve palsies

- Sudden onset of nausea, vomiting, diarrhea
- Severe abdominal pain

Also, travel history, household contacts with diarrheal disease or foodborne illness, or association with daycare or food handling, may suggest that laboratory testing be done.

Foodborne Illness Epidemiology: For the Public

Public health surveillance attempts to identify common causes of foodborne illness and remove the culprit from circulation. When a person is diagnosed with certain foodborne illnesses, a public health nurse or epidemiologist interviews that person for exposures that commonly result in disease and compares those exposures with those of others with the same infection. In many cases, a person may have vomiting and diarrhea and blame it (often incorrectly) on the last place they ate. The interview process may identify a more plausible source of the infection, based on the average incubation period and common sources of infection related to the causative agent.

If you or a household member gets sick:

1. Protect others
   - Do not prepare food for others while you have symptoms (diarrhea or vomiting). People with jobs in food service should not work if they have diarrhea or vomiting.
   - Wash your hands even more frequently than you would usually do.
   - Dispose of a sick child's diapers promptly and wash hands thoroughly.
   - Children with diarrhea or vomiting should not attend school or daycare until symptoms are gone or until medically cleared.

2. Seek medical attention
   - If symptoms do not go away, visit a doctor or other medical professional.
   - If medication is prescribed, follow the instructions strictly.
   - Provide specimens when requested.

3. Participate in public health surveillance
   - Write down everything and everywhere you may have eaten in the last 3 days or more. Remember that what made you sick may not have been the last thing you ate. Also remember that the same food can be eaten by many people and not all get sick.
   - Think of any other close contacts that may have been ill with similar symptoms recently. This may help the public health investigator identify the source of illness.
   - Provide the information requested if contacted by a public health nurse or epidemiologist.
   - Provide specimens when requested.

For more information, or to report a disease or outbreak, contact your local health department or the Office of Epidemiology at the Utah Department of Health at 1-888-EPI-UTAH (374-8824).

References

1. Centers for Disease Control and Prevention. An Ounce of Prevention: Keeps the Germs Away. Last reviewed 8/18/2003. Accessed 4/16/2004 at: http://www.cdc.gov/ncidod/op/food.htm

2. Office of Epidemiology Newsletter, May 97, May 99, Apr 00, Sept 00, and Apr 01. Utah DOH, Salt Lake City, UT. Available at: http://health.utah.gov/els/epidemiology/newsletter/archives/archive_years.htm

3. Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians. AMA, CDC, FDA, USDA. Jan 2001. 2nd ed. available at: http://www.ama-assn.org/ama/pub/category/3629.html

4. Mermin J. et al. Reptiles, Amphibians, and Human Salmonella Infection: A Population-Based, Case-Control Study. Clinical Infectious Diseases 2004;38(Suppl 3):S253-61.

5. Centers for Disease Control and Prevention. Salmonellosis Associated with Chicks and Ducklings – Michigan and Missouri, Spring 1999. MMWR 2000;49:297-298.

6. State of Utah Rule R386-702, Communicable Disease Rule. Available at: http://www.rules.utah.gov/publicat/code/r386/r386-702.htm

Did you know?

Symptoms of Hepatitis A virus (HAV) infection include fever, jaundice, nausea, and flu-like symptoms. The incubation period can be 15 to 50 days, with an average of 28 days. Many children with Hepatitis A do not show symptoms but are still able to pass on the infection. HAV only infects humans, and occasionally some other primates. Infection is spread through the fecal-oral route, so it's often grouped with other food borne illnesses. However, Hepatitis A is a vaccine-preventable disease. Vaccination is recommended for children entering school, for travelers to developing countries, and others with high risk activities. Also, household contacts of recently diagnosed cases of Hepatitis A can be administered Immune Globulin under the direction of the health department to prevent infection. Immune Globulin and Hepatitis A immunization can be administered simultaneously. For information about receiving the vaccine, contact your local health department.

Sources:
1. Centers for Disease Control and Prevention. Diagnosis and Management of Food borne Illnesses: A Primer for Physicians and Other Health Care Professionals. MMWR 2004;53(No. RR-4)
2. American Academy of Pediatrics. Hepatitis A. In: Pickering LK, ed. *Red Book: 2003 Report of Committee on Infectious Diseases.* 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003.

Cumulative Number of Confirmed Cases for 20 Selected Diseases, Reported by Utah Health Districts, March 2004

Health District	Campylobacteriosis	*E. coli* 0157:H7	*E. coli non-0157:H7 STEC*	Giardiasis	*H. influenzae* (Invasive)	Hepatitis A (Acute Only)	Hepatitis B (Acute Only)	Hepatitis C (Acute Only)	Influenza	Meningitis (Aseptic)	Meningitis (Bacterial)	Meningitis (Viral)	Meningococcemia	Pertussis	Rabies (Animal)	Salmonellosis	SARS	Shigellosis
Bear River	2			1	1	1										2		
Central	2			1		1										1		
Davis	1			1								2		1		4		
Salt Lake	4			4		5	2		1					2		6		2
Southeast	1		1				1									1		
Southwest	3			3	1													
Summit																		
Tooele	1						1									2		
Tricounty				1			1											
Utah County			1	4		2										3		
Wasatach	1																	
Weber-Morgan	1											1				4		
March 2004	16	0	2	15	2	9	5	0	1	0	0	3	0	3	0	23	0	2
March 2003	16	0	3	18	0	1	4	0	154	1	0	3	0	3	0	14	0	4
2004 To Date	49	2	3	56	3	15	12	0	21	0	0	10	1	18	0	48	0	10
2003 To Date	31	2	4	69	5	6	9	0	314	1	0	8	0	10	0	35	0	8